

rates per 100,000/year were analyzed by race, rural/nonrural, and age (<45 and ≥45).

**RESULTS:** Age-adjusted incidence rates/100,000 for cervical cancer

Age	Race	SRRHIS			SEER		
		Rural	Nonrural	Total	Rural	Atlanta	Total
<45	white	2.47	5.06	4.17	4.59	4.32	4.34
	black	5.95	3.90	4.83	4.25	4.69	4.99
≥45	white	13.82	13.24	13.44	13.91	15.59	14.41
	black	57.54	34.74	45.56	29.23	33.59	27.03

Rates are similar between SRRHIS and SEER except in the case of black women over the age of 45. These women in rural SRRHIS have 1.66 times the incidence rate compared to those in nonrural SRRHIS and 1.97 times the rate of rural SEER.

**CONCLUSIONS:** The results of the study suggest that the incidence of cervical cancer in the region is consistent with the mortality rates. The age-group with the highest rates are black women over 45 in rural areas, suggesting the need to target this group to reduce the racial disparity in cervical cancer.

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#### INCIDENCE OF SQUAMOUS NEOPLASIA OF THE CERVIX AND VAGINA IN DES-EXPOSED DAUGHTERS

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**PURPOSE:** Women exposed to diethylstilbestrol (DES) in utero are known to have an excess risk of clear cell adenocarcinoma of the vagina and cervix, in addition to vaginal epithelial changes, but the effect on the incidence of squamous neoplasia is uncertain. This study evaluated the long-term risk of developing high-grade squamous neoplasia of the genital tract among women exposed prenatally to diethylstilbestrol.

**METHODS:** A cohort comprising 3899 DES-exposed and 1374 unexposed daughters was followed for thirteen years (1982-1995) for pathology-confirmed diagnoses of high-grade squamous neoplasia. A pathologist blinded to exposure status reviewed seventy-seven percent of cases. Poisson regression analysis was used to compute relative risks (RR) and 95% confidence intervals (CI) controlling for age, calendar year, screening history and other covariates.

**RESULTS:** The RR (95% CI) among DES-exposed versus unexposed, based on 111 cases of high-grade disease, was 2.12 (1.19-3.77). Adjustment for screening history had little effect, but when the analysis was restricted to a group highly screened before 1982, the risk was reduced. Risk estimates were higher among women exposed earlier in gestation; the RR (95% CI) for exposure within 7 weeks of the last menstrual period was 2.82 (1.43-5.53).

**CONCLUSIONS:** The findings support an association between in utero DES exposure and high-grade squamous neoplasia, although a role for more intensive screening among DES-exposed women in the production of this excess could not be completely ruled out.

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#### USE OF TOPICAL SUNSCREEN AND THE RISK OF MALIGNANT MELANOMA: RESULTS OF A META-ANALYSIS OF 9,067 PATIENTS

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**PURPOSE:** Prior epidemiological studies suggest that the use of sunscreen preparations is associated with increased risk of cutaneous malignant melanoma (CMM) although the data are conflicting. A meta-analysis was performed to evaluate this suspected association.

**METHODS:** A protocol was developed for a meta-analysis examining the association between frequent sunscreen use versus non-use and the development of CMM. Data from observational studies were pooled using a general variance based meta-analytic method employing confidence intervals. The outcome of interest was a summary relative risk (RRs) reflecting the risk of melanoma associated with sunscreen use versus non-use. Sensitivity analyses were performed when necessary to explain any observed statistical heterogeneity.

**RESULTS:** Eleven case-control studies enrolling 9,067 patients were combined in a meta-analysis. This yielded a RRs of 1.11 (CI = 0.37-3.32), a non-statistically significant result, (i.e. no association between sunscreen use and melanoma risk). Since the data were found to be heterogeneous, i.e.  $Q = 42.0$  ( $p < 0.001$ ), a series of sensitivity analyses were performed to explore possible sources of heterogeneity. Stratifying studies based on study design, i.e. hospital based versus population based, showed that hospital derived data were highly heterogeneous ( $Q = 36.9$ ,  $p < 0.001$ ) while the population registry data were not ( $Q = 4.9$ ,  $p = 0.18$ ). Combining those studies using population based data gave a RRs of 1.01 (95% CI = 0.46-2.28) indicating no association between sunscreen use and the development of CMM.

**CONCLUSIONS:** The available epidemiological data do not support the existence of a relationship between topical sunscreen use and an increased risk of CMM.

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#### SELF-REPORT OF SMOKING, OBESITY AND HYPERTENSION HISTORY AND SURVIVAL AMONG A COHORT OF IOWA RENAL CELL CARCINOMA CASES

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**PURPOSE:** Smoking, obesity and hypertension are well-established risk factors for the development of renal cell carcinoma

(RCC). However, little is known regarding the ability of RCC patient history regarding these characteristics to predict future survival.

**METHODS:** To evaluate this question, we conducted follow-up on a cohort of incident RCC cases first assembled in Iowa from 1986-1989 for case-control analysis. We report data on 364 cases aged 40-86 years who reported detailed anthropometric and lifestyle history on a mailed questionnaire. Mortality experiences through 1998 were determined by linkage to the Iowa Cancer Registry and other databases; 233 deaths were identified during the 2,470 total years of follow-up, with 145 of those having RCC listed as the underlying cause of death on the death certificate. The Cox Proportional Hazards model was used to estimate the risk associated with each potential prognostic characteristic.

**RESULTS:** After adjustment for age, a suggestion of an association with survival was noted for history of hypertension [Relative Risk (RR) = 0.8; 95% Confidence Interval (CI) 0.5-1.1] but no association was noted for either smoking or weight history. After further adjustment for tumor stage at diagnosis, evidence of an association for either smoking or obesity remained absent. However, after similar adjustment, the protective effect of history of hypertension actually strengthened slightly (RR = 0.7; CI 0.5-0.9). **CONCLUSIONS:** Data from this follow-up study of incident RCC cases in Iowa suggests that after adjustment for the strongest independent predictor of survival, a reported history of hypertension is associated with better survival.

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#### THE EXCESS INCIDENCE OF SQUAMOUS CELL ESOPHAGEAL CANCER AMONG US BLACK MEN: ROLE OF SOCIAL CLASS AND OTHER RISK FACTORS

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**PURPOSE:** To investigate the relationship between social class factors and squamous cell esophageal cancer and the extent to which alcohol, tobacco, diet, and social class contribute to the five-fold higher incidence among black than white men in the United States.

**METHODS:** Interviews were conducted with 347 incident cases of squamous cell esophageal cancer (119 white males and 228 black males) and 1354 population-based controls (743 white males and 611 black males) from Atlanta, Detroit, and New Jersey. Risks were estimated using unconditional logistic regression controlling for potential confounders.

**RESULTS:** Elevated risks of squamous cell esophageal cancer were associated with indicators of low social class, especially low annual income. The adjusted odds ratios (ORs) for subjects with incomes < \$10,000 versus incomes of \$25,000 or more were 4.3 (95% CI = 2.1-8.7) for whites and 8.0 (95% CI = 4.3-15.0) for

blacks. The combination of all four major risk factors: annual income less than \$25,000, moderate/heavy use of alcohol, use of tobacco for six months or longer, and consumption of less than 2.5 servings of raw fruits and vegetables per day accounted for almost all of the squamous cell esophageal cancers in whites (98%) and blacks (99%), and for 99% of the excess incidence among black men.

**CONCLUSIONS:** Lifestyle modifications, especially a lower intake of alcoholic beverages, would markedly decrease the incidence of this cancer in both races and narrow the racial disparity in risk. Further studies into the determinants of social class may help identify a new set of exposures for this tumor that are amenable to intervention.

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#### ASSOCIATION OF DIETARY ANTIOXIDANTS ON THE SEVERITY OF GASTRITIS IN A HIGH RISK POPULATION

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**PURPOSE:** This study is to examine the role of dietary antioxidant intake on the severity of gastritis at the baseline in an intervention study, Chemoprevention of Gastric Dysplasia.

**METHODS:** The Chemoprevention of Gastric Dysplasia is an intervention study conducted in the towns of Pasto and Tuquerres, Colombia. A 79-item food frequency questionnaire was administered to 1,219 subjects at baseline. Endoscopic screening for precancerous gastric lesions was performed in all subjects by biopsy and histologic diagnosis. Subjects without adequate diagnostic material (n = 18) and subjects identified as histologically normal (n = 12) or with gastric cancer (n = 4) were excluded from these analyses. Analysis of Variance on logarithm-transformed data was conducted on dietary antioxidants and the stages of gastritis (atrophic gastritis, intestinal metaplasia, and gastric dysplasia).

**RESULTS:** After adjusting for age, body mass index, smoking status, year of education, total calorie intake, and *H-pylori* infection status, dietary vitamin C and vitamin E were found to be inversely associated with the severity of gastritis (p < 0.05). Decreased dietary  $\alpha$ -carotene was found to be marginally associated with gastric dysplasia. Data were then stratified by town where subjects were recruited. The trends for the observed associations were apparent for dietary  $\alpha$ -carotene, vitamin C and E. However, the association was significant only for vitamin C in Pasto. Compared to subjects with atrophic gastritis, subjects diagnosed with gastric dysplasia have an approximately 15% lower intake of vitamin C. **CONCLUSIONS:** This study confirmed the protective effect of specific dietary antioxidants on the severity of gastritis. Dietary vitamin C, and to a lesser extent, dietary vitamin E are potentially important for the prevention of gastric cancer.

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